REMARKS

Applicant appreciates the thorough examination of the application that is reflected in the Final Office Action dated January 29, 2004. Claims 6-8 and 10-12 are pending in the application. Applicant respectfully requests reconsideration of this application for at least the following reasons.

Art-Based Rejections

Claims 6 and 10

The Office rejects claims 6 and 10 under 35 U.S.C. §103(a) as being unpatentable over Saints et al. (U.S. Patent No. 6,430,170) in view of Waldroup (U.S. Patent No. 6,070,058).

Applicant respectfully traverses these rejections for at least the following reasons.

As discussed in the Abstract of the Saints reference, the Saints reference relates to:

> A system and method for generating random numbers in a wireless communication network is presented. The ***noise present in the signal received by a wireless receiver is extracted to form random numbers***. Wireless transmitters typically are identified by a synchronization signal. In acquiring the synchronization signal, a wireless receiver generates ***a plurality of psuedorandom sequences***, despreads an incoming signal, integrates the resulting signal, and performs an energy computation to calculate an energy measure. One or more energy measures are collected in a pool of bits, and the bits are hashed to extract random numbers. (Emphasis added.)

In rejecting claim 6, the Office cites col. 4, lines 29-36 of the Saints reference. This section of the Saints reference discusses that:

> The present invention recognizes that random bits may be extracted from the noise intrinsic to the CDMA signal environment. Specifically, entropy extracted from the noise present at the input to the CDMA detector is used to build a pool of random bits from which random numbers are generated. The random numbers may then be used in processes such as cryptography. (Emphasis added.)

The Examiner concedes that the Saints reference does not disclose that "adjusted data bits are generated from the AGC circuit operating on a received signal." The Examiner then cites col. 9, lines 12-23 of the Waldroup reference as teaching the general concept of an AGC circuit. Specifically, Waldroup teaches that:

> An AGC detector circuit 62 receives a representative IF signal through AGC input line 63. As is discussed in greater detail below, a direct current (DC) signal is output from the AGC detector circuit 62 through an AGC detector output line 64 which represents the strength of the received signal. An AGC integrator circuit 66 compares the CD signal to a relatively constant AGC reference signal received over an AGC reference line 67 from the MSM ASIC 22. The integrated difference between the two signals is output onto an open loop output line 68 which is connected to a linear inverter 70 supplying an AGC control signal to the adjustable gain IF receiver amplifier circuit 34 over a receiver amplification control line 72. (Emphasis added.)

The Examiner then concludes that "it would have been obvious to person of ordinary skill in the art ...to employ AGC to generate adjusted data bits on a received signal as taught in Waldroup with random number generating system disclosed in Saints in order to control such amplitude variations such that wireless device keeps-in band energy is transmitted to demodulator at a fixed level thus allowing incoming received signal to be normalized. Saints discloses an encryptor for encrypting a signal using random numbers in (col. 4, lines 23-36)."

Applicant respectfully traverses this rejection for at least the following reasons.

*1. **The rejection is an impermissible hindsight reconstruction of the prior art***

Applicant submits that the rejection is an impermissible hindsight reconstruction, and that absent the teachings of the present application, there would be no motivation to modify Saints' general teaching of a random number generator 312 to utilize Waldroup's general teaching of an automatic gain control circuit, much less to provide "a random number selector subsystem for generating random numbers ***from adjusted data bits of a Receive Automatic Gain Control circuit, wherein said adjusted data bits are generated from said Automatic Gain Control circuit operating on a received signal***," as required by claims 6 and 10. The cited section of the Saints reference recognizes that random bits may be extracted from the noise intrinsic to the CDMA signal environment. Specifically, entropy extracted from the noise present at the input to the CDMA detector is used to build a pool of random bits from which random numbers are generated. However, the "random numbers" generated by Saints are generated by a much different method. There is nothing in Saints that suggests that there would be any benefit in modifying this method of Saints to provide "a random number selector subsystem for generating

random numbers from adjusted data bits of a Receive Automatic Gain Control circuit, wherein said adjusted data bits are generated from said Automatic Gain Control circuit operating on a received signal," as claimed.

2. The Official Action has not shown clear and particular evidence of a suggestion, teaching, or motivation to combine or modify the teachings of either patent

Applicant further submits that the Official Action has not shown clear and particular evidence of a suggestion, teaching, or motivation to combine the teachings of either patent, and that there is nothing in the Waldroup patent that would suggest the desirability of modifying the Saints patent to utilize an AGC circuit as a source of adjusted data bits that are to be used as random numbers in an encryption process.

As noted in the present application, the Automatic Gain Control element is employed in wireless phones to keep the in-band energy presented to the demodulator at a fixed level. Importantly, in one aspect of the present invention, it is the fact that the received in-band energy fades in a random fashion due to changes in the propagation path from shadowing, fading and multi-path phenomenon that allows the received signal to be "normalized by means of a variable gain amplifier of the AGC to provide a first set of random bits." *See* Application, 3:21-29.

The Saints patent discloses the general concept of an AGC circuit, but is silent with respect to how the output of that AGC circuit should be utilized for random number generation. Applicant submits that there would be no motivation to modify the random number generator 312 of Saints to utilize the output of an AGC circuit as a source of adjusted data bits that are to be used as random numbers in an encryption process since there would be no reason based on Waldroup to do so. Saints does not even slightly hint at the concept of using the adjusted data bits as random numbers in an encryption process. Therefore, in Waldroup, there is no motivation to use the output of the AGC of Waldroup as a source of random numbers since there would be no reason to infer an advantage in doing so. As such, based on the references, it would not have been obvious to generate "random numbers from adjusted data bits of a Receive Automatic Gain Control circuit, wherein said adjusted data bits are generated from said Automatic Gain Control circuit operating on a received signal," as required by claims 6 and 10.

Applicant notes that the mere fact that the references could be combined is irrelevant without clear and particular evidence of a suggestion, teaching, or motivation to combine the references.

3. The cited references fail to teach or suggest every limitation of claims 6 and 10

Claim 6 relates to an encryption system. Claim 6 requires:

> a random number selector subsystem for generating random numbers ***from adjusted data bits of a Receive Automatic Gain Control circuit, wherein said adjusted data bits are generated from said Automatic Gain Control circuit operating on a received signal***; and
>
> an encryptor for encrypting a signal using said random numbers. (Emphasis added.)

Applicant submits that the cited references fail to teach or suggest, for example, that "generating random numbers from adjusted data bits of a Receive Automatic Gain Control circuit, wherein said adjusted data bits are generated from said Automatic Gain Control circuit operating on a received signal," as required by claim 6.

Accordingly, for at least the foregoing reasons, Applicant submits that independent claims 6 and 10 are patentable over the cited references for at least the reasons stated above.

Claims 7 and 11

The Office rejects claims 7 and 11 under 35 U.S.C. §103(a) as being unpatentable over Saints et al. (U.S. Patent No. 6,430,170) in view of Lee et al. (U.S. Patent No. 6,038,266).

Applicant respectfully traverses these rejections for at least the following reasons.

The Examiner states that the Saints reference does not disclose that "instantaneous variations of the DC offset component signal where variations are generated from DC Offset Correction Loop operating on a received signal." To allegedly meet this deficiency of Saints, the Examiner then cites col. 10, lines 53-55 of the Lee et al. reference which teaches that "the DC offset correction circuit path can be used to prevent instability as well as correct for DC offset." (Emphasis added.)

Applicant respectfully traverses this rejection for at least the following reasons.

1. The rejection is an impermissible hindsight reconstruction of the prior art

Applicant submits that the rejection is an impermissible hindsight reconstruction, and that absent the teachings of the present application, there would be no motivation to modify Saints' general teaching of a random number generator 312 to utilize Lee's general teaching of an a DC offset correction loop circuit, much less to provide "a random number selector subsystem for generating random numbers from instantaneous variations of the DC offset component of the input signal, wherein said variations are generated from said DC Offset Correction Loop circuit operating on a received signal," as required by claims 7 and 11. The cited section of the Saints reference recognizes that random bits may be extracted from the noise intrinsic to the CDMA signal environment. Specifically, entropy extracted from the noise present at the input to the CDMA detector is used to build a pool of random bits from which random numbers are generated. However, the "random numbers" generated by Saints are generated by a much different method. There is nothing in Saints that suggests that there would be any benefit in modifying this method of Saints to provide "a random number selector subsystem for generating random numbers from instantaneous variations of the DC offset component of the input signal, wherein said variations are generated from said DC Offset Correction Loop circuit operating on a received signal," as claimed.

*2. **The Official Action has not shown clear and particular evidence of a suggestion, teaching, or motivation to combine or modify the teachings of either patent***

Applicant further submits that the Official Action has not shown clear and particular evidence of a suggestion, teaching, or motivation to combine the teachings of either patent, and that there is nothing in the Lee patent that would suggest the desirability of modifying the Saints patent to utilize a DC offset correction loop circuit as a source of ***random numbers (from instantaneous variations of the DC offset component*** of the input signal) in an encryption process.

As noted in the present application, the In Phase (I)/Quadrature Phase(Q) DC Offset Correction Loop of the CDMA phone is employed to generate one random data bit every 20 milliseconds. The Applicant appreciated that the DC offset is added to the digital signal in a random fashion due to effects of the conversion process on analog signal characteristics, and that the DC Offset Correction Loop normalizes the mean DC value of the converted signal to zero by

means of gain amplification and summing, to provide an additional random bit." See Application, 4:1-14.

The Lee patent discloses the general concept of a DC offset correction loop circuit, but is silent with respect to how the variations of the DC offset component of the input signal should be utilized for random number generation. Applicant submits that there would be no motivation to modify the random number generator 312 of Saints to utilize the output of a DC offset correction loop circuit as a source of variations of the DC offset component of the input signal that are to be used as random numbers in an encryption process since there would be no reason based on Lee to do so. Saints does not even slightly hint at the concept of using the variations of the DC offset component of the input signal as random numbers in an encryption process. Therefore, in Lee, there is no motivation to use the output of the DC offset correction loop circuit of Lee as a source of random numbers since there would be no reason to infer an advantage in doing so. As such, based on the references, it would not have been obvious to generate "random numbers from instantaneous variations of the DC offset component of the input signal, wherein said variations are generated from said DC Offset Correction Loop circuit operating on a received signal," as required by claims 7 and 11.

Applicant notes that the mere fact that the references could be combined is irrelevant without clear and particular evidence of a suggestion, teaching, or motivation to combine the references.

3. The cited references fail to teach or suggest every limitation of claims 7 and 11

Claim 7 relates to an encryption system. Claim 7 requires:

> a random number selector subsystem for ***generating random numbers from instantaneous variations of the DC offset component*** of the input signal, ***wherein said variations are generated from said DC Offset Correction Loop circuit operating on a received signal***; and
>
> an encryptor for encrypting a signal using said random numbers. (Emphasis added.)

Applicant submits that the cited references fail to teach or suggest, for example, "generating random numbers from instantaneous variations of the DC offset component of the input signal, wherein said variations are generated from said DC Offset Correction Loop circuit operating on a received signal," as required by claim 7.

Accordingly, for at least the foregoing reasons, Applicant submits that independent claims 7 and 11 are patentable over the cited references for at least the reasons stated above.

Claims 8 and 12

The Office rejects claims 8 and 12 under 35 U.S.C. §103(a) as being unpatentable over Saints et al. (U.S. Patent No. 8,430,170) in view of Official Notice.

Applicant respectfully traverses these rejections for at least the following reasons.

Claim 8 relates to an encryption system. Claim 8 requires:

> a random number selector subsystem for generating random numbers from variations in the receive signal propagation delay over time, wherein a CDMA Time Tracking Loop circuit is operating to track said variations in the receive signal propagation delay over time; and
>
> an encryptor for encrypting a signal using said random numbers. (Emphasis added.)

With respect to claims 8 and 12, the Examiner acknowledges that "Saints does not disclose CDMA Time Tracing Loop Circuit is operating to track variations in the receive signal propagation delay over time. Examiner takes Official notice that this is well known in the art especially in the wireless communication environment."

Applicant submits that the cited references fail to teach or suggest "generating random numbers from variations in the receive signal propagation delay over time, wherein a CDMA Time Tracking Loop circuit is operating to track said variations in the receive signal propagation delay over time," as required by claim 8.

Applicant respectfully traverses this rejection, and to preserve Applicant's argument on appeal, Applicant requests that the Examiner provide an affidavit that supports the rejection of claims 8 based on the official notice of the Examiner.

Alternatively, in the event the Examiner seeks to maintain this ground of rejection, Applicant requests that the Examiner provide documentary evidence that these features would indeed be well-known. *See* MPEP 2144.03, 37 C.F.R. § 1.104 (d)(2), and *In re Lee*, 277 F.3d 1338, 1344-45, 61 U.S.P.Q.2d 1430, 1435 (Fed. Cir. 2002) (finding that reliance on "common knowledge and common sense" did not fulfill the PTO's obligation to cite references to support its conclusions as PTO must document its reasonings on the record to allow accountability and effective appellate review).

For at least the foregoing reasons, Applicant submits that claim 8 is patentable over the cited references.

Claims 10-12

With respect to claim 10, the Examiner "takes Official notice that extracting random data bits from AGC is well known in the art."

With respect to claim 11, the Examiner "takes Official notice that extracting random data bits from a DC Offset Correction Loop is well known in the art."

With respect to claim 12, the Examiner "takes Official notice that extracting random data bits from a Time Tracing Loop is well known in the art."

Applicant respectfully traverses this rejection, and to preserve Applicant's argument on appeal, Applicant requests that the Examiner provide an affidavit that supports the rejection of claims 10-12 based on the official notice of the Examiner.

Alternatively, in the event the Examiner seeks to maintain this ground of rejection, Applicant requests that the Examiner provide documentary evidence that these features would indeed be well-known. *See* MPEP 2144.03, 37 C.F.R. § 1.104 (d)(2), and *In re Lee*, 277 F.3d 1338, 1344-45, 61 U.S.P.Q.2d 1430, 1435 (Fed. Cir. 2002) (finding that reliance on "common knowledge and common sense" did not fulfill the PTO's obligation to cite references to support its conclusions as PTO must document its reasonings on the record to allow accountability and effective appellate review).

REQUEST FOR ALLOWANCE

In view of the foregoing, Applicant submits that all pending claims in the application are patentable. Accordingly, reconsideration and allowance of this application are earnestly solicited. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

Respectfully submitted,

Dated: July 28, 2004

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